# 7.0 Management and Operations

**Safety Criterion:** 7.0 - 1

Normal operations shall be conducted in accordance with approved operational safety requirements and in strict accordance with administrative and procedural controls.

**Implementing Codes and Standards:**

~~BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan~~
~~Section: 1.3.13 Procedures~~
~~Section: 5.6.1 Procedure Development~~
BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Standard for Conduct of Operations at the RPP-WTP

**Regulatory Basis:**

*DOE/RL-96-0006 4.3.1.2 Conduct of Operations-Normal Operations*
*DOE/RL-96-0006 5.1.3 Process Safety Responsibility*

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**Safety Criterion:** 7.0 - 2

Normal operation, including anticipated operational occurrences, maintenance, and testing, shall be controlled so that facility and system variables remain within their normal operating ranges and the frequency of demands placed on Important to Safety structures, systems, and components are small.

**Implementing Codes and Standards:**

**Regulatory Basis:**

*DOE/RL-96-0006 4.1.1.3 Defense in Depth-Control*

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**Safety Criterion:** 7.0 - 3

The operating organizations shall become and remain familiar with the features and limitations of components included in the design of the facility. They shall obtain appropriate input from the design organization on pre-operational testing, operating procedures, and the planning and conduct of training.

**Implementing Codes and Standards:**

BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan
Section: 1.3.14 Startup Testing
~~Section: 1.3.15 Operations~~
BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Standard for Conduct of Operations at the RPP-WTP

**Regulatory Basis:**

*DOE/RL-96-0006 4.1.5.2 Configuration Management-Contractor Design Knowledge*

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* Next available appendix

## 7.5 Conduct of Operations

**Safety Criterion:** 7.5 - 1

A program for conduct of operations at the facility shall be established and implemented using a tailored approach.

**Implementing Codes and Standards:**

~~BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan~~
~~Section: 1.3.15 Operations~~
BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Standard for Conduct of Operations at the RPP-WTP

**Safety Criterion:** 7.5 - 2

The conduct of operations program shall address:

(1) Operations organization and administration;
(2) Shift routines and operating practices,
(3) Control area activities;
(4) Communications;
(5) Control of on-shift training;
(6) Investigation of abnormal events;
(7) Notifications;
(8) Control of equipment and system status;
(9) Lockout and tagout;
(10) Independent verification;
(11) Logkeeping;
(12) Operations turnover;
(13) Operations aspects of facility chemistry and unique processes;
(14) Required reading;
(15) Timely orders to operators;
(16) Operations procedures;
(17) Operator aid postings;
(18) Equipment and piping labeling;
(19) Emergency operating procedures for dealing with responses to accident conditions.

**Implementing Codes and Standards:**

~~BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan~~
~~Section: 1.3.15 Operations~~
BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Standard for Conduct of Operations at the RPP-WTP

**Regulatory Basis:**

*DOE/RL-96-0006 4.3.1.1 Conduct of Operations-Organizational Structure*
*DOE/RL-96-0006 4.3.1.3 Conduct of Operations-Emergency Operating Procedures*
*DOE/RL-96-0006 4.3.1.4 Conduct of Operations-Readiness*

* Next available appendix

# APPENDIX *

# STANDARD FOR CONDUCT OF OPERATIONS AT THE RPP-WTP**

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## CONTENTS

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# 1.0 INTRODUCTION

This document provides performance standards for the implementation of a Conduct of Operations (ConOps) program at the BNFL River Protection Project -Waste Treatment Plant (WTP). The implementation of these standards should result in a high level of performance and therefore, contribute to the safe and reliable operation of the RPP-WTP.

The regulatory requirements for ConOps are found in the Regulatory Process document (DOE-RL 1998), which states in part that the Contractor shall submit a "draft of the Conduct of Operations Plan", which complies with the current authorization basis and describes the operational practices to be used. Related safety requirements are found in the Safety Requirements Document (BNFL 1999).

The conduct of operations program for the RPP-WTP will be based upon the following key elements:

a. operations organization and administration
b. shift routines and operating practices
c. control area activities
d. communications
e. control of on-shift training
f. investigation of abnormal events
g. notifications
h. control of equipment and system status
i. lockout and tag out
j. independent verification
k. log keeping
l. operations turnover
m. operations aspects of facility chemistry and unique processes
n. required reading
o. timely order to operations
p. operations procedures
q. operator aid posting
r. equipment and piping labeling
s. emergency operating procedures for dealing with responses to accident conditions.

Procedures and operator training will be used to implement the requirements of the ConOps program defined by this standard.

# 2.0 DEFINITIONS

This section provides a glossary of terms and their definitions that are used throughout this document in the discussion of the ConOps standards. These definitions are specific to this standard and are not intended to imply or provide meaning to similar terms used in other standard documents.

**AFFECTED PERSONNEL:** An employee whose job requires the use of a machine or equipment on which maintenance is being performed under a lockout/tagout or whose job requires working in the area in which maintenance is being performed.

**AT–THE-CONTROLS:** The specific floor space where a control operator(s) is stationed and in which other personnel in that area can interfere with or otherwise restrict or distract the attention of the operator(s) performing equipment or process control activities.

**CATEGORIZATION:** The relative ranking of an occurrence to ensure that the urgency of notification is readily identifiable and that more serious occurrences are highlighted to management.

**CHECKLIST (also referred to as Checksheets):** A form used by personnel to aid in the turnover process which provides a convenient method of denoting equipment in service or out of service, work in progress, completed or to be completed, abnormal conditions or events, and provides oncoming personnel with a list of documents for review to ensure a complete transfer of facility status information.

**CONCERN:** Matter of interest that may involve an event or condition adverse to safety, health, quality assurance, security, or has environmental implications.

**CONDITION:** An as-found state, whether or not resulting from an event, which may involve adverse safety, health, quality assurance, security or environmental implications. A condition differs from an event in that an event is a real-time occurrence (e.g., chemical release, loss of power, etc.) whereas a condition represents a chronic or legacy problem (e.g., an error in analysis or calculation, a design anomaly, a weakness in a management process, etc.).

**CONTROL AREA:** An area or room having an assemblage of control devices (i.e., switches, dials, breakers, valves) and indicating/monitoring equipment (i.e., meters, gauges, recorders, programmable devices, control terminals, etc.) which are used for the control of a process or system and interruption or misoperation of that process or system could jeopardize safety or the environment or result in significant financial loss.

**CORRECTIVE ACTION:** Action taken to correct an event or condition and prevents its recurrence.

**CRITIQUE:** A meeting of the persons who were involved in or knew anything about an event (desirable or undesirable) to document a chronological listing of the facts.

**EMERGENCIES:** Emergencies are the most serious events and require the highest alert status for onsite personnel and, in specified cases, offsite authorities.

**ESSENTIAL POSITION (also KEY position):** A position function to which a person must be assigned and present in order that a facility process or operation can be safely conducted. Individuals who support the operation (Industrial Safety, Quality Assurance, etc.) but whose absence would not directly preclude operation of the process, are not considered essential positions. Essential positions, for the purpose of this standard, include only individuals assigned to the facility operations organization. Designation of a essential position does not imply that an individual must be assigned to the position at all times. However, essential positions are those which must be filled when the process is in operation. Essential positions shall be identified for the Facility.

**EVENT:** Any real-time deviation from the planned or expected action, condition, or operation if the deviation has impacted, or could impact, safe operation, or has environmental protection, safety or health protection significance. In the context of this standard “event” is synonymous with “abnormal event”. An emergency is also considered an event.

**FACILITY:** WTP equipment, systems, buildings, utilities, and services.

**GRADED APPROACH:** A term that permits different degrees of detail or scope for a given topic, based on the hazard or risk posed to the facility. A graded approach does not mean dismissal or violation of a control process (e.g., policy or procedure).

**INDEPENDENT VERIFICATION:** The act of checking, by a qualified operator at a separate occasion, that a given operation conforms to established operational criteria, as well as checking a component position, independently of activities related to establishing the component's position.

**LOCKOUT:** The application of a lock on a control to render the control inoperative. Other specifically approved devices (such as wiring a control inoperable, installation of a control defeating device, etc.) also may constitute a lockout.

**MAXIMUM AND MINIMUM VALUES:** The highest and lowest parameter values that are either provided by the equipment supplier, determined by actual testing or prescribed by safety documentation.

**NORMAL OPERATING RANGE:** Those operating parameter values expected during normal equipment and process operations.

**ON-SHIFT TRAINING (also referred to as on-the-job-training):** That portion of an operator qualification program where the trainee receives training within the job environment with hands-on experience.

**OPERATING LOG:** A chronological record (written or electronic) of events or functions recorded by individuals assigned to key positions. Operating logs are used by personnel to provide a method for recording system and equipment operating information during the performance of their assigned duties and to provide an accurate history of plant operations.

**OPERATING PRACTICES:** Actions and checks required as a minimum of operators as they conduct their duties.

**OPERATOR:** Broadly defined as anyone specifically qualified and authorized to operate equipment.

**OPERATOR AIDS:** Information including sketches, notes, graphs, instructions, drawings and other documents used to assist operators in performing assigned duties.

**OPERATOR AID LOG:** A notebook or file containing an index and copies of all approved and posted operator aids.

**QUALIFIED PERSONNEL:** A person who has been trained to perform specific tasks.

**ROOT CAUSE:** An underlying or initiating event or condition, within management control, that produces the failure of a system, structure, or component which, if corrected, will prevent the occurrence/recurrence.

**ROUND SHEETS (also LOG SHEETS):** A record (written or electronic) of operating parameters for equipment and areas located within the responsibility of a particular operator position. Round sheets contain information such as time of observation, maximum and minimum acceptable operating parameters, and normal operating ranges. Round sheets should also contain a narrative section for describing causes for abnormal conditions, for noting actions taken to correct abnormal conditions and for indicating that supervisors have been notified of abnormal conditions.

**SHIFT SUPERVISOR:** The senior individual designated by position as responsible for all aspects of operation of the facility assigned and to whom all on-shift operations personnel report during the assigned shift. The shift supervisor responsibilities are transferred only through formal turnover to qualified relief. This responsibility includes all aspects of shift activities as related to facility operation including production, personnel and equipment safety, both nuclear and industrial environmental protection, maintenance, quality assurance, radiation and contamination control, and training.

**SSCs:** Those Systems, Structures, and Components that comprise a physical operating configuration.

**SURVEILLANCE:** A procedure that is used to verify equipment and systems are within normal operating ranges and safety limits.

**TAGOUT:** The application of a tag on the control that indicates that the control is not to be used except under conditions indicated by the tag.

**TIMELY ORDER:** A written communication provided by operations senior management that relays information of importance to appropriate operating personnel. A timely order cannot be used as a substitute for or to change a procedure.

**TECHNICAL SAFETY REQUIREMENT (TSR):** Those requirements that define the conditions, the safe boundaries, and the management or administrative controls necessary to ensure the safe operation of the facility, reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials, and from radiation exposures due to inadvertent criticality.

**WALK-DOWN:** A detailed review of the status of systems, equipment, and processes. A walk-down may include physical inspection, documentation review, and discussion of visual status indicators and process control screens.

## 3.0 STANDARDS

This section provides the standards for organizations to use in developing directives, plans, and procedures relating to the conduct of operations at the WTP. The implementation of these requirements and guidelines should result in high quality, safety, and uniformity of operations.

### 3.1 OPERATIONS ORGANIZATION AND ADMINISTRATION

Excellence in operations will be accomplished by management establishing high standards, communicating those standards to the workforce, providing sufficient material and personnel resources to the operations department, ensuring that personnel are well trained, monitoring operating performance, and holding workers and their managers accountable for their performance in conducting activities. Facility written policies and procedures shall address the issues of operational staff roles, authorities, and accountability.

The WTP senior management shall be responsible for establishing specific goals and objectives (including safety and environmental) for the operations organization and for assigning responsibility to achieve these objectives considering input from the working level when appropriate. Performance measures shall be identified to assist in the measurement of success in meeting organizational objectives. Operations personnel shall be informed of the organizational objectives (with an emphasis on quality and safety) and their individual responsibility, authority, and accountability relative to these objectives. Remedial actions shall be taken when performance does not meet expectations.

The operations personnel training requirements shall be defined and documented. The shift supervisor training program shall include supervisory and managerial training in technical and administrative aspects of the job functions.

Audits, reviews, investigations, and management assessments shall be performed as part of the checks and balances needed in a successful operating program. Management shall routinely observe personnel performing operating activities through both a formal self–assessment program and informal "walking the job". Any deficiencies identified shall be documented, analyzed, trended, and corrected using a graded approach. In addition, other groups (e.g., QA) shall periodically provide independent review to assess operational performance.

## 3.2 SHIFT ROUTINES AND OPERATING PRACTICES

Facility procedures shall define standards for professional conduct to ensure operator performance meets facility management, customer, and regulator expectations. The procedures shall also describe aspects of routine operating staff shift activities and watch-standing practices that are important to safety. These practices are as follows:

### 3.2.1 Status Practices

The operations staff shall manage, operate, and maintain the facility in compliance with operating procedures and Technical Safety Requirements (TSRs). Operators and operations shift supervisors shall promptly notify each other of changes in facility status, operational off-normal conditions, or any difficulties encountered while performing assigned tasks. Logbooks, round sheets, and changes to status indicators shall be used to compile and transmit status information efficiently and accurately.

### 3.2.2 Safety Practices

As part of the ConOps program, operators shall follow the requirements of the industrial and radiological safety programs, as described in procedures. Appropriate personnel protective equipment shall be made available for use in designated areas to reduce the potential for injury. Areas requiring personnel protective equipment shall be properly posted and periodically inspected. Similarly, operators shall be trained to exercise appropriate precautions when working with or around potential hazardous objects (e.g., ladders, electrical equipment, other machines) or hazardous materials (e.g., chemical, and toxic materials) to reduce personal injury. Graded hazard assessments shall be performed prior to performing fieldwork to ensure that 1) hazards are identified, 2) hazards are removed or mitigated, and 3) proper protective equipment is identified. Personnel protection practices shall be implemented to ensure that radiological and chemical exposure hazards are maintained as low as reasonably achievable. Strict adherence to procedures and posted personnel protection requirements shall be enforced to ensure 1) appropriate use of monitoring and protective equipment, 2) cognizance of permissible exposure levels, 3) proper use of and adherence to radiation work permits and posted areas, and 4) effective and accurate deficiency reporting practices.

### 3.2.3 Operator Inspection Tours

Operators shall conduct periodic inspections of plant areas to ensure that the status of those areas and associated equipment is known. These tours shall be conducted at scheduled frequencies. During the tours, equipment shall be inspected to ensure that it is operating properly or, in the case of standby equipment, that it is fully operable (i.e., no known deficiencies that would make the equipment inoperable). The results of operator inspection tours shall be documented.

### 3.2.4 Round Sheets

Round sheets (also known as log sheets) shall be used to uniformly record the status and condition of equipment and work areas. Operator round sheets shall be used to provide operators guidance on the extent of equipment and areas inspections and a means to record events and status of the inspected areas and equipment. Limits on the sheets shall be used to inform operators of important control parameters for safe operation. The operators shall record entries on the sheets to document out of specification readings that will be reported to other operating personnel. The round sheets shall be monitored periodically by the supervisory personnel as part of the normal shift routine to ensure that inspection tours are conducted as required, and that out-of-limit parameters are promptly corrected.

### 3.2.5 Response to Indications

Instrument readings shall be considered accurate, and operators shall respond to them accordingly until inaccuracy is proven. Ignoring an unusual reading because an instrument is believed to be faulty can cause unsafe conditions to go undetected. Operators shall check other indications, if possible, when unexpected readings are observed. Prompt corrective action shall be taken after observing off-normal or unexpected indications to reduce the effects of the off-normality.

### 3.2.6 Resetting Protective Devices

When protective devices (e.g., circuit breakers, fuses) are tripped, action shall be taken to understand the cause before resetting the devices. Before action is taken, the operator shall ensure that an unsafe, off-normal, or extenuating condition does not exist that would preclude reset.

### 3.2.7 Authority to Operate Equipment

The overall operation of the facility shall be the responsibility of the on-duty shift supervisor. Operations management shall ensure that only trained and qualified (per the Training Plan) personnel operate plant equipment. The operator and operations shift supervisor shall be made aware of activities affecting plant equipment. If a special test, evolution or abnormal condition arises, the operations shift supervisor shall be responsible and accountable for determining corresponding operating conditions, system alignments or equipment manipulations to ensure that operations remain within the bounds of the safety analysis. The operational judgement of the shift supervisor shall not be bypassed or overruled except by higher line operational authority.

### 3.2.8 Resource Management

The on-duty shift supervisor shall manage the material and personnel resources necessary to perform facility operations within the bounds of the authorization basis. Minimum staffing levels shall be identified for defined facility operating modes. TSRs and operating procedures shall identify equipment that must be available to remain within the safety envelope. The shift operations supervisor shall have documented accountability and authority to obtain the resources necessary to assure the safety of facility operations. Information important to maintaining safe and reliable operations shall be transmitted through the shift operations supervisor for dissemination to the operating crew using one or more appropriate communication methods (written, verbal shift brief, verbal one to one, etc.).

## 3.3 CONTROL AREA ACTIVITIES

Control area activities (both central control room and local workstations) shall be conducted in a manner that ensures safe and reliable facility operations. Operators shall be trained to be alert and attentive to indications and alarms. Indicators shall be monitored frequently per procedures, and response to alarms shall be prompt, to support timely actions to correct alarm conditions. All reasonable actions shall be taken to clear alarming conditions. Distractions or ancillary duties that compromise an operator's primary responsibilities shall be minimized to preclude interference with the operator's ability to monitor and respond to facility parameters. Professional behavior shall be required in designated control areas at all times.

### 3.3.1 Control Area Access

Access to the central control room shall be limited to those authorized personnel having an official business need for access. Within the central control room, an “at the controls” area shall be established for qualified operators who are responsible for operating facility systems and equipment. Personnel who are not part of the on-duty operating crew shall require permission from a member of the on-duty central control room operating crew to enter the “at the controls” area of the central control room. On duty control room operators have the authority and responsibility to limit access to the control room and the “at the controls” area to ensure that ancillary activities are not distracting from their ability to safely operate the facility.

### 3.3.2 Operation of Equipment

Only specifically authorized persons shall be allowed to operate facility equipment. Authorized operating personnel shall be responsible for monitoring control panel indications and alarms and for taking prompt action to determine the cause of and correct abnormalities. Trainee’s operating facility equipment shall be directed by a qualified operator or supervisor.

## 3.4 COMMUNICATIONS

Since accurate communications are essential for the safe and efficient operation of facilities, guidance in the use of the various forms of audible and verbal communications is necessary. These communications shall be controlled to ensure that they do not detract from normal operations and are available in an emergency.

Various communication devices will be used to provide for transmission of administrative, operating and emergency information within the Facility (e.g., telephones, paging equipment, public address system, horns, bells, sirens, two-way radios). Operators and supervisors shall be trained to provide formal instructions in a consistent, clear and concise manner which enhances the ability of personnel to correctly understand the instructions.

The operating station for each shift position shall be equipped with adequate communication equipment to assist in the performance of the operator's assigned duties and ensure that personnel in control areas (central control room and local work stations) can quickly contact on-duty operators or supervisors.

The facility shall be provided with systems (e.g., horns, bells, sirens) for communicating facility emergencies. In areas where emergency systems cannot be heard, alternate methods shall be provided for alerting personnel, including flashing lights, personal pagers that vibrate, or persons dedicated to performing notifications. Emergency communication systems shall be tested periodically as part of a system surveillance procedure to ensure they are functional.

The use of the public address system shall be administratively controlled to avoid excessive paging and unnecessary announcements. Radio use shall not be allowed in areas of the facility where electronic interference with plant equipment may result. Areas where radio use is prohibited shall be identified and posted.

## 3.5 CONTROL OF ON-SHIFT TRAINING

On-shift training is considered to be that portion of an operator qualification program where the trainee receives training within the job environment and with as much hands-on experience as possible. This period of instruction will normally be controlled by the operations organization because the operation of equipment may be involved. On-shift training shall be tailored to the position and experience/comfort level of the individual.

### 3.5.1 Adherence to the Training Program

On-shift training shall be performed in accordance with a formal documented training program. The training program shall prescribe the knowledge requirements for operating positions and what the trainee must do on shift to fulfill the knowledge requirements.

### 3.5.2 On-Shift Instructor Qualification

On-shift training shall be conducted by qualified operators, operations supervisors or training organization personnel. The on-shift instructors shall be specifically selected, taking into account communication skills, technical knowledge and ability to provide hands-on experience. Since, in some cases, trainees will actually be operating equipment, some on-shift instructors shall complete appropriate instructor training.

### 3.5.3 Qualified Operator Supervision and Control of Trainees

Whenever trainees operate equipment, a qualified on-shift instructor shall observe the trainee in order to ensure that the trainee does not make an error that could adversely impact the facility. Trainees shall use established procedures during on-shift training events.

### 3.5.4 Operator Qualification Program Approval

The operator qualification program shall be approved by operations management. Operator qualification shall be based on one-to-one instruction at the control station or equivalent (e.g., simulator).

### 3.5.5 Training Documentation

Completion of the operator qualification program shall be formally documented. Classroom requirements and written exam results shall be documented by training instructors. On-shift training and associated system checkouts shall be documented by the on-shift instructors.

### 3.5.6 Suspension of Training

The on-shift training instructor shall immediately suspend the training and takes the controls during off normal events, accident conditions, or when the instructor believes suspension is necessary so that training activities will not affect the safe operation of the Facility.

### 3.5.7 Maximum Number of Trainees

The maximum number of trainees allowed to simultaneously participate in a particular on-shift training evolution shall be determined and controlled. Operations supervisors shall ensure that the established limits are observed.

## 3.6 INVESTIGATION OF ABNORMAL EVENTS

The program for the investigation of abnormal events shall ensure that facility events are appropriately investigated to assess the impact of the event, to determine the root cause of the event, to determine whether the event is reportable to the regulators and to identify corrective actions to prevent recurrence of the event. Abnormal events shall be documented and corrective actions monitored and documented through completion.

## 3.7 NOTIFICATIONS

Timely notification of the appropriate Facility management, DOE regulator and other agencies shall be performed in accordance with Facility procedures. These notifications shall be provided within specified time frames as prescribed in Facility procedures. Information shall be gathered and transferred in a systematic and controlled manner in accordance with procedures. Facility event reporting procedures shall include the following elements:

a. Specific responsibilities for notifications
b. Identification and classification of events and conditions requiring notification
c. Identification of primary and alternate personnel to be notified for various situations
d. Establishment of time requirements for notifications
e. Definition of record keeping requirements.

## 3.8 CONTROL OF EQUIPMENT AND SYSTEM STATUS

Equipment and facility configuration shall be maintained within the design requirements and approved authorization basis. Operators shall use approved procedures to control systems and operate equipment.

The shift supervisor shall be responsible for maintaining proper configuration and for authorizing and communicating status changes to major equipment and systems that include the systems, structures and components (SSCs) required to maintain the safety envelope. Shift supervision shall ensure that operators possess the necessary protective equipment, procedures, training, and qualifications to safely perform work.

Before first placing equipment or a system into operation, the appropriate components shall be checked for proper alignment and readiness for operation. Procedures shall identify the readiness checks and approvals required prior to operating equipment. Administrative controls shall be implemented to ensure that operations are maintained within the limits defined in the TSRs.

Equipment deficiency identification and documentation (e.g., tags, logbooks, and status indicators) shall be used to provide the necessary communication for removing equipment from active service until it is repaired, tested, and returned to service. The on-duty shift operations supervisor or designee shall authorize all shift activities (including maintenance) on equipment that is important to safety, that affects operations or that changes control indications or alarms. The authorization shall be provided in writing (electronic or by hand) on the document controlling the work. The status of work activities shall be made available for review by operating personnel.

The status of control panel and local panel alarms shall be readily available to operating personnel. Administrative controls shall be implemented to ensure that operators have the latest information to enable safe operation of the facility. The administrative controls shall include instructions for operators during installation of temporary equipment and when equipment is modified.

## 3.9 LOCKOUTS AND TAGOUTS

A Facility lockout/tagout program shall be established and implemented for equipment operation, servicing, maintenance, and modification situations where inadvertent energizing or startup of equipment or release of stored energy could cause injury to employees. These types of evolutions shall be analyzed and controlled to ensure that personnel injury and equipment damage are prevented. Appropriate lockout and tagout devices shall be affixed to energy isolation devices to prevent unexpected energizing, startup, or energy release. Lockout and tagout devices shall be readily identifiable, standardized, substantial, and durable. Personnel protective materials (e.g., gloves, rubber mats, etc) shall be provided and personnel shall be trained in the proper use of personnel protective materials during lockout and tagout evolutions.

Facility procedures shall be established to provide direction to implement the lockout and tagout analysis and controls. Facility personnel who implement the lockout and tagout program shall receive periodic training on the lockout/tagout program.

The Facility lockout and tagout procedures shall address the appropriate lock and tag application for both personnel protection and to prevent equipment damage. The procedures shall also address temporary removal of locks and tags and the requirements for periodic audit and inspection of the lockout and tagout program.

## 3.10 INDEPENDENT VERIFICATION

Components in systems that have safety functions shall be evaluated for the application of independent verification according to documented criteria. Independent verification shall be applied to Safety Design Class and Safety Design Significant components following extended shutdowns of equipment, following system modifications, or following maintenance or calibration unless documented criteria for exception to independent verification has been met. Operators shall perform independent verification of component positions in accordance with Facility procedures. Guidance on and direction for graded application of independent verification based on safety significance shall be provided in Facility procedures. Each operation requiring the application of independent verification shall be identified in the specific applicable operating procedure.

## 3.11 LOGKEEPING

Narrative logbooks (written or electronic operating record) shall be established for essential operations shift positions to maintain an accurate history of facility activities and to provide tools for reconstructing off-normal events. The logbooks shall provide accessible information and data associated with normal operation, testing, and off normal activities. Facility activities and events shall be recorded promptly to ensure the accuracy of the entry. Facility procedures shall identify personnel authorized to enter information into logbooks and expectations regarding the type of information to record, legibility and corrections to erroneous entries. The logbooks shall be periodically reviewed by management to ensure that entries are accurate and adequate. Completed logbooks shall be stored and retrieved in accordance with facility procedures.

## 3.12 OPERATIONS TURNOVER

Turnover procedures shall be established to ensure that information required to perform adequate shift operations is documented by the off-going shift and reviewed by the oncoming shift in order to ensure that the oncoming shift has an accurate picture of overall facility status.

Oncoming personnel shall review and discuss documentation such as daily operating round sheets, logbooks, and checklists with the off-going personnel before assuming responsibility for their shift position. The oncoming personnel shall make an entry in the appropriate log or checksheet that he/she is assuming responsibility for the shift position. Off-going shift supervision and operators shall be responsible for documenting equipment status, making entries on the round sheets and logbooks, and apprising oncoming personnel of equipment status.

Facility procedures shall provide detailed direction on the implementation of proper shift turnover practices (including relief during shift) and establish a turnover checklist to aid in effective communication of facility status. Shift turnover practices shall include walkdowns or reviews of appropriate work areas and control panels by assigned operators and shift supervisor and a shift briefing conducted by the oncoming shift supervisor.

## 3.13 OPERATIONS ASPECTS OF FACILITY CHEMISTRY AND UNIQUE PROCESSES (PROCESS CONTROL)

To enhance proper process control of systems, operations personnel shall have an understanding, relevant to their positions, of all facility processes, (including special tests or short-term campaigns) safety and environmental limits, and shall effectively coordinate activities with the technical and process support departments. Properly informed operators are in a unique position to identify early signs of process-related problems or adverse trends and take appropriate corrective action. Operators shall be consulted and advised by technical and process support personnel. Operators shall be trained to survey and trend required parameters, recognize adverse conditions, take appropriate action, provide timely reports of the condition to management, and record required information.

## 3.14 REQUIRED READING

The required reading program shall be developed and implemented that provides a method for various types of information applicable to the Facility to be disseminated to pertinent personnel. Types of documents that shall be considered applicable for required reading include selected procedure changes, selected occurrence reports, selected lessons learned papers, TSR-related changes, and selected training material. Facility managers or designees shall determine the appropriate material and required completion dates for the required reading list for the staff. The required reading program shall include appropriate controls that include a record of acknowledgment for the reader to indicate that the reading has been completed and record retention measures. The required reading program shall be periodically reviewed by management to ensure the program is being properly complied with and maintained.

## 3.15 TIMELY ORDERS TO OPERATORS

Timely orders (also referred to as night orders) allow management to rapidly disseminate important daily or long-term directions, instructions, or information to operating personnel to support operational activities. Timely orders shall be issued by operations management (this responsibility may be delegated) and contain information that is dated, prominently posted, and segregated into daily and long-term orders. Orders shall be reviewed and the review documented during shift turnover. Reviews of long-term orders are not required daily but only when initially issued and when changes occur. A timely order shall not be used to change operating procedures. Orders that are no longer applicable or outdated shall be removed or cancelled. Management shall periodically review the orders to ensure only current and applicable orders remain effective.

## 3.16 PROCEDURES

Operating procedures shall be written to provide specific direction for operating systems during normal and postulated abnormal and emergency conditions. Procedures shall provide appropriate direction to ensure that the facility is operated within it's design and safety bases. A documented program shall be established that describes the operating procedure standards that will be used by the facility. The procedure standards shall describe the development process, content requirements, review and approval process, and requirements for the use of procedures. The standards shall also include the process for control of procedure changes and revision.

## 3.17 OPERATOR AID POSTINGS

An operator aid is a posting, diagram, simple schematic, or similar instruction intended to assist operators in performing their duties and may be developed by any employee. Operator aids are informal tools used to provide information to operators but do not establish or modify the facility operations baseline and therefore, are not requirements. Operator Aides, when used, shall be posted close to the area of expected use in a manner that does not obscure instruments or controls. Operator aids shall be developed and controlled in accordance with procedures and shall include approval by operations management, documentation in an operator aid logbook, and periodic review to ensure that the aids are correct and necessary. Outdated aids shall be removed.

## 3.18 EQUIPMENT AND PIPING LABELS

A standardized equipment labeling program ensures that facility personnel are able to positively identify specific pieces of facility equipment (e.g., valves, tanks, instruments, etc). Safety Design Class and Safety Design Significant equipment labels shall be clearly distinguished from those of other equipment. Label information shall meet regulatory requirements and shall be consistent with facility drawings and procedures. Labels shall be placed on or as near as practicable to the associated equipment so the component is easy to identify. Facility procedures shall provide instructions for replacing labels that are misplaced or damaged.

## 4.0 REFERENCES

**BNFL 1999;** *TWRS-P Project Safety Requirements Document,* BNFL-5193-SRD-01, Rev. 2d, November 2, 1999.

**DOE-RL 1998;** *Concept of The DOE Regulatory Process For Radiological, Nuclear and Process Safety For TWRS Privatization Contractors (Regulatory Concept),* DOE/RL-96-0003, Rev 1, Section 4.3.2 "Contractor Input", Item 18b, July 1998.

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